

operating information of a construction machine to a base station using, for example, satellite communication or a commercial network. This has the benefit that such information can be read before the return of the construction machine, but has the disadvantage of the cost associated with the use of the satellite or commercial network link.

It is also known, e.g., from U.S. patent 6,256,594 (Yamamoto et al) to provide construction machines with a field communication network for supervising and monitoring a number of machines. For example, the field network 40 shown in Yamamoto et al includes a monitoring station at a field site 30, which monitors positional relations between vehicles, as well as other data. Since the monitoring station in Yamamoto et al is intended to both supervise and monitor the vehicles, the network 40 must be designed such that the monitoring station will be within the range of the transmitting devices in the vehicles at all relevant times.

According to the present invention, on the other hand, operating information of a construction machine is collected and stored at the construction machine. The construction machine is provided with a wireless radio having a limited range (e.g., low power wireless radio; Canceled claim 2). In accordance with the invention, a receiving device provided external to the construction machine causes transmission of the operating information from the construction machine to the receiving device only upon the determination that the construction machine is within a transmission permissible area related to the limited range of the wireless radio.

For example, referring to Figure 6 of the present application, before requesting the transmission of operating information stored on the construction machine (step S2), it is first determined whether the construction machine has passed into a transmission permissible area which is within the limited range of the wireless radio, e.g., whether the construction machine

passed through a gate of the base station (step S1). Thus, in this example the operating information can be read in advance of the actual return of the construction machine, but by using only a low power radio and without the need for a costly satellite or commercial network link.

In view of the above, all of the claims have been amended to clarify that the system or method includes determining whether the construction machine is within a transmission permissible area related to the limited range of the wireless radio. New Claim 21 further recites that the determining step comprises determining if the construction machine has passed through the gate of the base station.

Claims 1-20 were rejected under 35 U.S.C. §102 as being anticipated by U.S. patent 6,349,252 (Imanishi et al). However, this rejection is respectfully traversed. Imanishi et al discloses that an information management controller 1 on a construction machine sends stored data to a monitoring station 19 (column 8, lines 33-36, 43-44 and 54-56). However, there is no description about the manner in which the stored data is sent to the monitoring station 19. Specifically, there is no description of a wireless radio having a limited range, and determining if the construction machine is within a transmission permissible area related to that limited range. The amended claims therefore clearly define over this reference.

Claims 1-20 were also rejected under 35 U.S.C. §102 as being anticipated by Yamamoto et al, which was discussed above. However, here again, there is no description in the reference of determining whether the construction machine is within a transmission permissible region which is related to the limited range. Instead, the supervision of the construction machines by the monitoring station suggests that the radio power must be sufficient to monitor the construction machines at all times, in which case there is no need for

determining whether the construction machine is within a transmission permissible region.

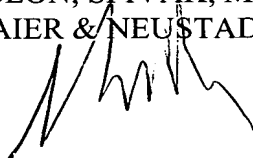
The amended claims are thus also believed to define over this reference.

Claims 1, 3 and 9 have also been amended in light of the rejection under 35 U.S.C. §112, which is believed to be moot.

Applicant therefore believes that the present application is in a condition for allowance and respectfully solicits an early Notice of Allowability.

Respectfully submitted,

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IN THE CLAIMS

Cancel Claims 2, 5, 10, 11, 16-19.

Please amend the claims as follows:

--1. (Amended) A system for controlling operating information of a construction machine comprising:

operating information collection means at said construction machine for collecting operating information regarding operation of a construction machine;

a first receiving device provided external to said construction machine;

storage means at said construction machine for storing the operating information; and

a transmission controller for transmitting the operating information read from the storage means to [a] the first receiving device [provided except the construction machine] through a wireless radio having a limited range, [said transmission controller transmitting said operating information to said first receiving device when receiving a transmission request from outside of the construction machine, or continuously for a predetermined period], wherein said first receiving device includes means for determining that the construction machine is within a transmission permissible area related to the limited range of the wireless radio.

3. (Amended) The system according to claim 1, further comprising:

an operating information control device for controlling said operating information received by said first receiving device; and

operating information accumulating means provided on said operating information control device to accumulate said operating information, said operating information accumulating means classifying said operating information [every] for plural construction [machine] machines [to store it].

9. (Amended) A construction machine, comprising:

operating information collection means at said construction machine for collecting operating information regarding operation of a construction machine;

a first receiving device provided external to said construction machine;

storage means at said construction machine for storing the operating information; and

a transmission controller for transmitting the operating information read from the storage means to [a] the first receiving device provided [except] external to the construction machine through a wireless radio having a limited range, [said transmission controller transmitting said operating information to said first receiving device when receiving a transmission request from outside of the construction machine, or continuously for a predetermined period], wherein said first receiving device includes means for determining that the construction machine is within a transmission permissible area related to the limited range of the wireless radio.

15. (Amended) A method for reading operating information of a construction machine, comprising the steps of:

collecting and storing operating information at said construction machine regarding an operating state of a construction machine;

transmitting the stored operating information to a [low power] wireless radio at said construction machine, said wireless radio having a limited range; [and]

receiving the transmitted operating information by a receiving device external to said construction machine [within a transmittable area of said low power wireless radio] to thereby read said operating information from said construction machine; and

determining if the construction machine is within a transmission permissible area related to the limited range of the wireless radio.--